

Applicant respectfully points out that the Examiner has erroneously stated on the Office Action Summary that claims 56 and 57 are withdrawn from consideration. Applicant cancelled claims 56 and 57 in the Response to the First Office Action.

Please amend the instant application as follows:

In the Claims:

58. (twice amended) A Chemical-Mechanical Polishing (CMP) method for polishing Ta barrier layers in integrated circuit metallization structures including copper and silica, said method including flowing polishing slurry containing silica abrasive, DI water, and a copper passivation agent, onto a platen, inducing relative motion between said wafer and said platen and maintaining a force between said platen and said wafer, and removing said wafer from against said platen, said polishing occurring for a total polishing period of time, comprising,

11 incorporating into said polishing slurry for a final portion of said total polishing period of time less than or equal to 10% of said total polishing period of time, an organic additive selected from the group consisting of:

polyvinyl alcohol (PVA), PVA-poly(vinyl acetate) co-polymer, PVA-polyethylene co-polymer, sorbitol, glycerol, polyacrylamide (PAA), ethylene glycol, di(ethylene glycol), poly(ethylene glycol) (PEG), glycerol ethoxylate (GEO), dimethylsiloxane-ethylene oxide co-polymer (DMSiO-EO), polyethylene oxide surfactants, octylphenol polyethylene oxide, nonylphenol polyethylene oxide, polyoxyethylene lauryl ether, polyoxyethylene cetyl ether, perfluorinated analogs of polyethylene oxide

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surfactants, glycerol propoxylate (GPO), organic amines, N,N-diethylcyclohexylamine (DCA), and polyethyleneimine (PEI); said organic additive not being included in said polishing slurry prior to said final portion of said total polishing period of time.

63. (twice amended) In a Chemical-Mechanical Polishing (CMP) method for polishing Ta barrier layers in integrated circuit metallization structures including copper and silica, said method including flowing polishing slurry containing silica abrasive, DI water, and a copper passivation agent onto a platen, inducing relative motion between said wafer and said platen while maintaining a force between said platen and said wafer, and removing said wafer from against said platen, said polishing occurring for a first polishing period of time, the improvement comprising:

By
decreasing said flow of said polishing slurry prior to said step of removing said wafer from against said platen; and

following said step of decreasing said flow of said polishing slurry and prior to said step of removing said wafer from against said platen, flowing a polishing additive solution onto said platen for a second period of time while inducing relative motion between said wafer and said platen and maintaining a force between said platen and said wafer;

said polishing additive solution comprising;

DI water;

a copper passivation agent selected from the group consisting of, 1,2,4-triazole, benzotriazole (BTA), imidazole, 5-methyl benzimidazole, polyaniline, indazole, and purine; and an organic additive selected from the group consisting of,

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polyvinyl alcohol (PVA), PVA-poly(vinyl acetate) co-polymer, PVA-polyethylene co-polymer, sorbitol, glycerol, polyacrylamide (PAA), ethylene glycol, di(ethylene glycol), poly(ethylene glycol) (PEG), glycerol ethoxylate (GEO), dimethylsiloxane-ethylene oxide co-polymer (DMSiO-EO), polyethylene oxide surfactants, octylphenol polyethylene oxide, nonylphenol polyethylene oxide, polyoxyethylene lauryl ether, polyoxyethylene cetyl ether, perfluorinated analogs of polyethylene oxide surfactants, glycerol propoxylate (GPO), organic amines, N,N-diethylcyclohexylamine (DCA), and polyethyleneimine (PEI);

said polishing slurry not including said organic additive prior to said step of flowing said polishing additive solution.